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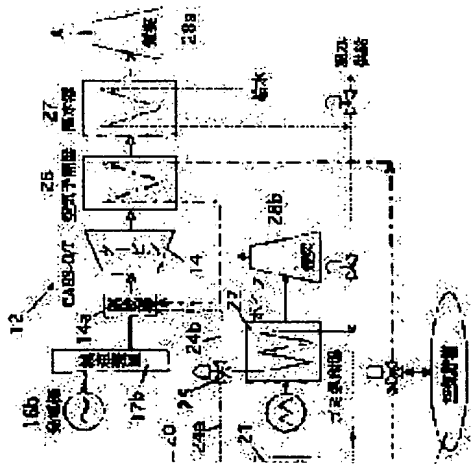
(54) ELECTRIC POWER STORAGE TYPE GAS TURBINE GENERATOR FACILITY

(57)Abstract:

PROBLEM TO BE SOLVED: To provide an electric power storage type gas turbine generator facility capable of reducing the size of a compressed air storage tank, as well as generate power with maximum output at times of peak power demand during day time.

SOLUTION: This electric power storage type gas turbine generator facility is provided with a compressed air producing



device 11, having an air compressor 13 and an electric motor 16a, a gas turbine power device 12 having a gas turbine 14 and a power generator 16b, a compressed air storage tank 2 for storing air compressed by the air compressor and providing it to a combustor 14a for the gas turbine, a steam turbine 20 which helps drive the air compressor, a steam generating device 22 for continuously generating high pressure steam, and a steam line 24 for providing high pressure steam to the steam turbine and combustor for the gas turbine from the steam generating device. When the compressor is driven at night, steam is supplied to the steam turbine and the driving power of the air compressor is decreased. When the gas turbine generates power during the day, steam is supplied to the gas turbine 20, or the combustor 14a for the gas turbine and output is increased. Furthermore, extra high pressure steam is supplied to the steam turbine 20 and the drive power of the air compressor is reduced.

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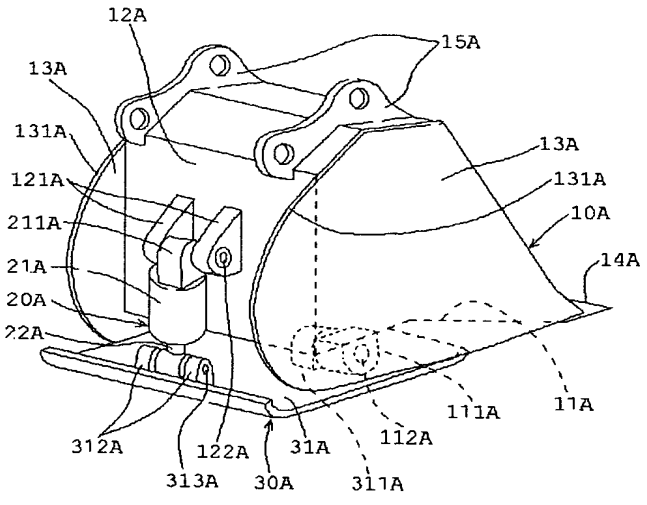
(54)【発明の名称】　振動転圧板付きバケットを備えたパワーショベル

(57)【要約】
【課題】　杭打ち、地固め、バケット内の粘土などの附着物の完全排除、バケット刃先の振動による掘り込み、土砂等の均一混合等に特別の効果が得られる、振動転圧板付きバケットを備えたパワーシヨベルを提供する。
【解決手段】　バケット背面板１２Ａに固着したブラケット１２１Ａに回動可能に油圧往復動振動シリンダ２０Ａを取りつけ、バケット底板１１Ａに回動可能に転圧板３０Ａを取りつけ、油圧往復動振動シリンダ２０Ａのピストンロッド２２Ａ後端を回動可能に転圧板３０Ａに取りつけたものである。



【特許請求の範囲】
【請求項１】　バケット背面板１２Ａに固着したブラケット１２１Ａに回動可能に油圧往復動振動シリンダ２０Ａを取りつけ、バケット底板１１Ａに回動可能に転圧板３０Ａを取りつけ、前記油圧往復動振動シリンダ２０Ａのピストンロッド２２Ａ後端を回動可能に前記転圧板３０Ａに取りつけ、前記転圧板３０Ａをバケット刃先１４Ａとほぼ同一平面上に形成したことを特徴とする振動転圧板付きバケットを備えたパワーシヨベル。
【請求項２】　バケット背面板１２Ｂに固着したブラケット１２１Ｂに回動可能に油圧往復動振動シリンダ２０Ｂを取りつけ、バケット底板１１Ｂに回動可能に転圧板３０Ｂを取りつけ、前記油圧往復動振動シリンダ２０Ｂのピストンロッド２２Ｂ後端を回動可能に前記転圧板３０Ｂに取りつけ、前記転圧板３０Ｂをバケット刃先１４Ｂとほぼ同一平面から斜めに立ち上つた斜面に形成したことを特徴とする振動転圧板付きバケットを備えたパワーシヨベル。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、振動転圧板付きバケットを備えたパワーシヨベルに関する。
【０００２】
【従来の技術】従来、パワーシヨベルのバケットは、掘削と土砂等の積込みが主で、地面に対する転圧はアームにより２～３メートル上空にバケットを上げて一気に地面にたたきつけて行つていたので、転圧効率が悪い、機械の故障が多い、作業上危険であるなどの理由から地固めは、別の作業者により、地固め用ランマーを使用して行われていたが、労力と時間がかかる欠点があった。そこでバケットに取りつけた転圧板を振動モータによって振動させる装置が実用化されたが、振動の割には転圧効果が小さい、装置が嵩高となるため、バケット容量が大幅に減少し、積込作業量が著しく低下せざるを得ず全く普及していない。本発明者は、新たにバケット刃先面とほぼ同一平面に、又は、バケット刃先面より斜めに立ち上がった斜面に、転圧板を架設し、前記転圧板を、バケット背面板に隣接して取りつけた小型の油圧往復動振動シリンダにより、微細な振動を与えると共に、振動転圧板の架設を油圧往復動振動シリンダのピストンロッド後端と、バケット底板の下方との２ケ所で回動可能に支持すれば、前記ピストンロッドの往復動により転圧板が２度打ちする振動を発生して、大きな転圧効果とその他の特有の効果が得られることを見出し、本発明を完成した。
【０００３】
【発明が解決しようとする課題】本発明は、杭打ち、地固め、バケット内の粘土などの附着物の完全排除、バケット刃先の振動による掘り込み、土砂等の均一混合等に特別の効果が得られる、振動転圧板付きバケットを備えたパワーシヨベルを提供するものである。
【０００４】
【課題を解決するための手段】本発明振動転圧板付きバケットを備えたパワーシヨベルは、上記課題を達成するため、図示するように、バケット背面板１２Ａに固着したブラケット１２１Ａに回動可能に油圧往復動振動シリンダ２０Ａを取りつけ、バケット底板１１Ａに回動可能に転圧板３０Ａを取りつけ、前記油圧往復動振動シリンダ２０Ａのピストンロッド２２Ａ後端を回動可能に前記転圧板３０Ａに取りつけ、前記転圧板３０Ａをバケット刃先１４Ａとほぼ同一平面上に形成したものである。本発明振動転圧板付きバケットを備えたパワーシヨベルは、上記課題を達成するため、図示するように、バケット背面板１２Ｂに固着したブラケット１２１Ｂに回動可能に油圧往復動振動シリンダ２０Ｂを取りつけ、バケット底板１１Ｂに回動可能に転圧板３０Ｂを取りつけ、前記油圧往復動振動シリンダ２０Ｂのピストンロッド２２Ｂ後端を回動可能に前記転圧板３０Ｂに取りつけ、前記転圧板３０Ｂをバケット刃先１４Ｂとほぼ同一平面から斜めに立ち上つた斜面に形成したものである。　本発明において、小型の油圧往復動振動シリンダは、公知のものはすべて適用できるが、本発明者は、特開平１１－６１８７９号公報及び特開２０００－２０５２０９号公報にも例示している。また、本発明の振動転圧板は、バケット刃先方向とほぼ同一平面上に設けられるものと、バケット刃先と同一平面から立ち上がつて斜め方向の斜面に形成されたものとがあり、後者は、地面に対し通常４５度以下、好ましくは３０度～３５度程度の角度の斜面板として取りつけられる。
【０００５】
【発明の実施の形態１】本発明の実施の形態１が図１及び図２に示されている。本発明実施例の振動転圧板付きバケットは、バケット１０Ａと油圧往復動振動シリンダ２０Ａと転圧板３０Ａとからなる。バケット１０Ａは、先端に刃先１４Ａを設けた底板１１Ａ、底板１１Ａの後端に連設して立ち上がつた背面板１２Ａ、底板１１Ａの両側から連設して立ち上がった側板１３Ａ、１３Ａ、背面板１２Ａに固着した上部ブラケット１５Ａ、背面板１２Ａに固着した１対のブラケット１２１Ａ、底板１１Ａに固着した１対のブラケット１１１Ａからなつている。油圧往復動振動シリンダ２０Ａは、シリンダ本体２１Ａと、これに固着したヘッドブラケット２１１Ａとピストンロッド２２Ａを備え、ヘッドブラケット２１１Ａは１対の背面板ブラケット１２１Ａとピン１２２Ａを介して回動可能に軸支され、ピストンロッド２２Ａ後端は後記する転圧板３０Ａに取りつけた１対のブラケット３１２Ａにピン３１３Ａを介して回動可能に軸支されている。転圧板３０Ａは、振動板３１Ａと１対のブラケット３１１Ａと１対のブラケット３１２Ａを固着し、１対のブラケット３１１Ａは、底板１１Ａの１対のブラケット１１

１Ａとピン１１２Ａを介して回動可能に軸支されている。１対のブラケット３１２Ａは、前述のように、油圧往復動振動シリンダ２０Ａのピストンロッド２２Ａの後端に、ピン３１３Ａを介して回動可能に軸支されている。また、転圧板３０Ａは、振動板３１Ａを、バケット刃先１４Ａの形成する平面とほぼ同一平面になるように形成している。また、油圧往復動振動シリンダ２０Ａのシリンダヘッド１２１Ａのピン１２２Ａにゴムライニング、１対のブラケット１１１Ａ、１対のブラケット１２１Ａ、１対のブラケット３１１Ａ、１対のブラケット３１２Ａ等の底面に防振ゴム等を取り付けて振動緩衝構造としてもよい。さらに、油圧往復動振動シリンダ２０Ａを取り囲む背面板１２Ａ、両側面板１３Ａ等に吸音ゴム板を貼着した上に、吸音ゴム板で油圧往復動振動シリンダ２０Ａを両側面板１３Ａの縁１３１Ａを介して被覆して吸音構造としてもよい。また、この吸音構造は土砂の侵入防止にもなる。なお、図２に示すように、バケット１０Ａの上部ブラケット１５Ａは、一方端はアーム４０とピン４１を介して回動可能に軸支され、他方端は、バケットシリンダ５０のピストンロッド５１の後端ロッドピン５１１に一方端を回動可能に軸支されたリンク６０の他方端とピン４２を介して回動可能に軸支されている。リンク７０は、一端をアーム４０とピン７１を介して軸支され、他端をピストンロッド５１後端とピン５１１を介して回動可能に軸支されている。従つて、地固め、杭打ちを転圧板３０Ａで行なうときは、アーム４０の回動及びバケットシリンダ５０のピストンロッド５１のストロークの調節により転圧板３０Ａを所要の向きに対面させて、油圧往復動振動シリンダ２０Ａを作動させれば、転圧板３０Ａは１分間１００～１２００回、振幅約１０ミリメートル程度の振動を発生して、シリンダ２１Ａからピストンロッド２２Ａのストロークが出るときは、転圧板３０Ａをピン３１３Ａを支点として押し出し、ピストンロッド２２Ａのストロークが引くときは、転圧板３０Ａをピン１１２Ａを支点として押し出し、転圧板３０Ａは図上左右に２度打ちする形で振動するので、転圧板３０Ａは地固め又は杭打ちを効率よく行うことができる。また、バケット１０Ａで土砂等の積込みをしたのちは、バケット１０Ａの振動により積み込んだ土砂等を完全に排出することができる。このほか、バケット刃先の振動による掘削、バケット内の粘土等の附着積込物の排除や土砂等の均一混合等ができる。

【０００６】

【発明の実施の形態２】本発明の実施の形態２が図３及び図４に示されている。本発明実施例の振動転圧板付きバケットは、バケット１０Ｂと油圧往復動振動シリンダ２０Ｂと転圧板３０Ｂとからなつている。バケット１０Ｂは、先端に刃先１４Ｂを設けた底板１１Ｂ、底板１１Ｂの後端に連設して立ち上がつた背面板１２Ｂ、底板１１Ｂの両側から連設して立ち上がった側板１３Ｂ、１３Ｂ、背面板１２Ｂに固着した上部ブラケット１５Ｂ、背面板１２Ｂに固着した１対のブラケット１２１Ｂ、底板１１Ｂに固着した１対のブラケット１１１Ｂからなつている。油圧往復動振動シリンダ２０Ｂは、シリンダ本体２１Ｂと、これに固着したヘッドブラケット２１１Ｂ、ピストンロッド２２Ｂを備え、ヘッドブラケット２１１Ｂは１対の背面板ブラケット１２１Ｂとピン１２２Ｂを介して回動可能に軸支され、ピストンロッド２２Ｂ後端は、後記する転圧板３０Ｂに取りつけた１対のブラケット３１２Ｂにピン３１３Ｂを介して回動可能に軸支されている。転圧板３０Ｂは、バケット刃先１４Ｂの形成する平面と約３０度乃至３５度の角度で斜め方向に立ち上がつている振動斜面板３１Ｂと、１対のブラケット３１１Ｂと１対のブラケット３１２Ｂを固着し、１対のブラケット３１１Ｂは、底板１１Ｂの１対のブラケット１１１Ｂとピン１１２Ｂを介して回動可能に軸支されている。１対のブラケット３１２Ｂは、前述のように、油圧往復動振動シリンダ２０Ｂのピストンロッド２２Ｂの後端に、ピン３１３Ｂを介して回動可能に軸支されている。振動緩衝構造及び吸音構造を加えるときは、発明の実施の形態１と同様であるので詳細説明を省略する。なお、バケット１０Ｂの上部ブラケット１５Ｂは、図４に示すように、一方端はアーム４０とピン４１を介して回動可能に軸支され、他方端は、バケットシリンダ５０のピストンロッド５１の後端のロッドピン５１１に一方端を回動可能に軸支されたリンク６０の他方端とピン４２を介して回動可能に軸支されている。リンク７０は、一端をアーム４０とピン７１を介して軸支され、他端をピストンロッド５１後端とピン５１１を介して回動可能に軸支されている。従つて、地固め、杭打ちを転圧板３０Ｂで行なうときは、アーム４０の回動及びバケットシリンダ５０のピストンロッド５１のストロークの調節により、転圧板３０Ｂを所要の斜面の向きに対面させて、油圧往復動振動シリンダ２０Ｂを作動させれば、発明の実施の形態１と同様に効率よく行うことができ、そのほかの作業も発明の実施の形態１と同様にできるが、本実施例の場合、転圧板３０Ｂがバケット刃先１４Ｂと同一平面になく斜め方向の斜面を形成しているので、バケット刃先１４Ｂが邪魔にならず、法面の地固めに最適で、運転席からも転圧状況がよく観察できる。

【０００７】

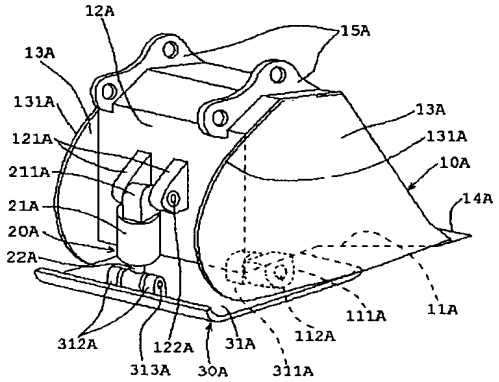
【発明の効果】本発明の振動転圧板付きバケットを備えたパワーシヨベルは、幅狭い溝堀りや溝底の地固め、法面などの斜面の地固めを、微小な振幅で転圧板を振動させるだけで行え、また、杭打ち、粘土質の粘着物積み出し、バケット刃先による掘削、土砂等の均一混合等も転圧板を僅かな振幅で振動させれば済み、作業能率の向上及び作業安全性の確保に大きく寄与できる。

【図面の簡単な説明】

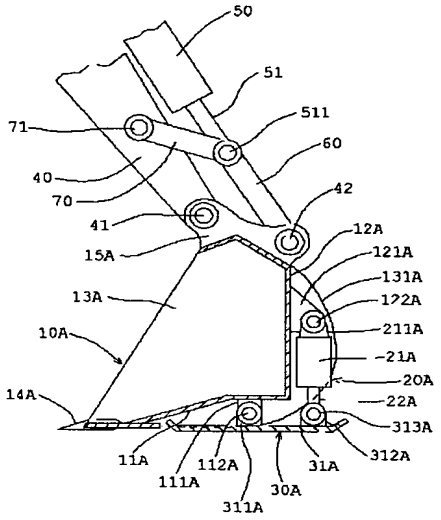
【図１】本発明の実施の形態を示す要部の斜視図であ

る。
【図２】図１の説明図である。
【図３】本発明の別の実施の形態を示す要部の斜視図である。
【図４】図３の説明図である。
【符号の説明】
１０Ａ、１０Ｂ　バケット
１１Ａ、１１Ｂ　バケット底板
１２Ａ、１２Ｂ　バケット背面板
１２１Ａ、１２１Ｂ　ブラケット
２０Ａ、２０Ｂ　油圧往復動振動シリンダ
２２Ａ、２２Ｂ　ピストンロッド
３０Ａ、３０Ｂ　転圧板

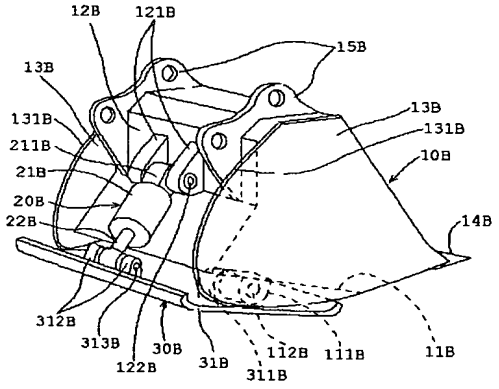
【図１】



【図２】



【図３】



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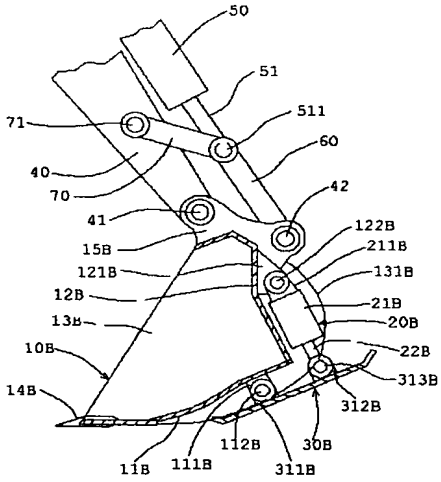

CLAIMS

[Claim(s)]
[Claim 1] The compressed-air manufacturing facility which has an air compressor and a motor, and a gas turbine and the gas-turbine-power-generation facility which has a generator, In the stationary-energy-storage mold gas-turbine-power-generation facility equipped with the compressed-air tank for storing the air compressed with the air compressor and supplying this to the combustor for gas turbines The steam turbine which drives said air compressor auxiliary, and the steam generator which generates a high pressure steam continuously, Steamy Rhine which supplies a high pressure steam to said steam turbine and said combustor for gas turbines from a steam generator, A steam is supplied to a steam turbine at the time of the compressor drive of a preparation and Nighttime, and the power driven of an air compressor is reduced. At the time of the gas turbine power generation of day ranges The stationary-energy-storage mold gas-turbine-power-generation facility characterized by what an excessive high pressure steam is supplied to a steam turbine, and the power driven of an air compressor is reduced for when supplying a steam to the combustor for a gas turbine or gas turbines, increasing an output and carrying out parallel running of the air compressor to a gas turbine further.
[Claim 2] Said steam generator is a stationary-energy-storage mold gas-turbine-power-generation facility according to claim 1 characterized by what is been the garbage disposal equipment which uses dust as a fuel.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the stationary-energy-storage mold gas-turbine-power-generation facility which combined compressed-air storage and gas turbine power generation.
[0002]
[Description of the Prior Art] As electric energy storage technology which uses the Nighttime power effectively, the so-called pumped hydro power generation is put in practical use. However, since pumped hydro power generation needs a vast reservoir for two points with fall, it has the trouble that reservation of the point located [new] is difficult. For this reason, the compressed-air storage gas-turbine-power-generation system attracts attention as new electric energy storage technology.
[0003] Compressed-air storage gas-turbine-power-generation system (it is called a CAES-G/T generation-of-electrical-energy system below Compressed Air Energy Storage GasTurbine System:) A compressor is turned with the dump power of Nighttime, the compressed air is stored, and day ranges perform gas turbine power generation using this storage air, and have the description which can double the generation-of-electrical-energy output of day ranges from a compressor drive becoming unnecessary using the same gas turbine in the gas turbine power generation of day ranges.
[0004] Drawing 2 is a CAES-G/T generation-of-electrical-energy structure-of-a-system Fig. already put in practical use. In this system, clutch 1a by the side of a compressor is connected with Nighttime, air is compressed and it stores in an underground cavity (compressed-air tank 2), and day ranges connect clutch 1b by the side of a gas turbine, and perform gas turbine power generation using storage air. However, in this system, since the huge compressed-air tank 2 was needed, except when [that was special] an underground rock salt layer was able to be used, there was a trouble that the installed cost of an air tank became excessive.
[0005] The utilization factor of a facility is low only at the generation of electrical energy (CAES generation of electrical energy) with the air which was able to be stored to the high-pressure air tank mentioned above. Then, the generation-of-electrical-energy system which raises a utilization factor by making possible the usual gas turbine power generation which bypasses a high-pressure air tank and ventilates a direct gas turbine in air from a compressor, and is utterly shown in drawing 3 is proposed ("conceptual design of an ACC-CAES generation-of-electrical-energy system", steam-generated nuclear electric power generation, May, and 1998). This generation-of-electrical-energy system forms bypass air Rhine 5 which puts side by side the gas-turbine-power-generation facilities 3 and 4 low-pressure [which arranged the generator motor], and high-pressure between a compressor and a turbine, and installs the compressed-air tank 2 between a high pressure compressor and a high pressure turbine, and bypasses the high-pressure gas-turbine-power-generation facility 4.
[0006]
[Problem(s) to be Solved by the Invention] however -- the generation-of-electrical-energy system of drawing 2 -- ** -- there was a problem that the power consumption which needs a huge compressed-air tank and an installed cost needs for the high compressor drive in ** night was large. Moreover, in the

generation-of-electrical-energy system of drawing 3 , although the steam was generated using the compressed-air heat of cooling in the case of storage of ** compressed air, there was a trouble that a steam turbine output was small and inadequate as auxiliary power for a compressor drive, only with this steam.

[0007] This invention is originated in order to solve this trouble. That is, the purpose of this invention is to offer the stationary-energy-storage mold combined cycle power generation facility which can miniaturize a compressed-air tank and can be generated by the maximum output at the power-requirements peak period of daytime.

[0008]

[Means for Solving the Problem] The compressed-air manufacturing facility which has an air compressor and a motor according to this invention, In the stationary-energy-storage mold gas-turbine-power-generation facility equipped with the gas turbine, the gas-turbine-power-generation facility which has a generator, and the compressed-air tank for storing the air compressed with the air compressor and supplying this to the combustor for gas turbines The steam turbine which drives said air compressor auxiliary, and the steam generator which generates a high pressure steam continuously, Steamy Rhine which supplies a high pressure steam to said steam turbine and said combustor for gas turbines from a steam generator, A steam is supplied to a steam turbine at the time of the compressor drive of a preparation and Nighttime, and the power driven of an air compressor is reduced. At the time of the gas turbine power generation of day ranges In supplying a steam to the combustor for a gas turbine or gas turbines, increasing an output and carrying out parallel running of the air compressor to a gas turbine further The stationary-energy-storage mold gas-turbine-power-generation facility characterized by what an excessive high pressure steam is supplied to a steam turbine, and the power driven of an air compressor is reduced for is offered.

[0009] According to the configuration of this invention, a high pressure steam can be continuously generated with a steam generator, the part can be supplied to the combustor for gas turbines according to power requirements, and a generation-of-electrical-energy output can be increased. That is, by supplying a high pressure steam to a combustor, to the peak period of the power requirements of daytime, the flow rate of the mixed gas of air and a steam can be raised, and a generation-of-electrical-energy output can be freely increased at it according to need. This increment in an output is possible to about 30% increase extent of the rated output of a turbine, and can reduce that part and the required storage air content per unit generated energy. Moreover, since according to the configuration of this invention it has the steam turbine which drives an air compressor auxiliary and the high pressure steam of the surplus of said steam generator drives this steam turbine, except the peak period of power requirements, the power driven of an air compressor can always be reduced and that part and an air compressor can be miniaturized.

[0010] According to the desirable operation gestalt of this invention, said steam generator is a garbage disposal equipment which uses dust as a fuel. Without using an excessive fuel by using this garbage disposal equipment, a compressed-air tank can be miniaturized, it can generate electricity by the maximum output at the power-requirements peak period of daytime, and the whole thermal efficiency can be raised.

[0011]

[Embodiment of the Invention] Hereafter, the desirable operation gestalt of this invention is explained with reference to a drawing. Drawing 1 is the whole stationary-energy-storage mold gas-turbine-power-generation facility block diagram by this invention. In this drawing, the stationary-energy-storage mold gas-turbine-power-generation facility 10 of this invention is the CAES-G/T generation-of-electrical-energy system mentioned above, and is equipped with the compressed-air manufacturing facility 11, the gas-turbine-power-generation facility 12, and the compressed-air tank 2.

[0012] The compressed-air manufacturing facility 11 was equipped with an air compressor 13 and motor 16a, and the gas-turbine-power-generation facility 12 is equipped with a gas turbine 14 and generator motor 16b. Moreover, with this operation gestalt, it has reduction gear 17b between an air compressor 13 and the generator motor 16 between step-up gear 17a, a gas turbine 14, and the generator motor 16, and each device can be operated now at the optimal rate. Moreover, it has the compressed-air tank 2 for

storing the air compressed with the air compressor 13, and supplying this to combustor 14a for gas turbines. By this configuration, air can be compressed with a compressor 13 at night, it can store in the compressed-air tank 2, and gas turbine power generation which used storage air can be performed daytime. In addition, it is cooled to about 50 degrees C or less with an air cooler 18, and the air compressed with the air compressor 13 is supplied and stored in the compressed-air tank 2 through a selector valve 19.

[0013] The stationary-energy-storage mold gas-turbine-power-generation facility 10 of this invention is further equipped with steamy Rhine 24a and 24b which supplies a high pressure steam to a steam turbine 20 and combustor 14a for gas turbines from a steam turbine 20, a steam generator 22, and a steam generator 22. A steam turbine 20 drives an air compressor 13 auxiliary through step-up gear 17a. Moreover, preferably, a steam generator 22 is a garbage disposal equipment which uses dust as a fuel, and generates a high pressure steam continuously.

[0014] Moreover, since branching Rhine which supplies a high pressure steam to a steam turbine 20 and combustor 14a for gas turbines is equipped with the Mikata flow control valve 25 and gas turbine power generation is not carried out to steamy Rhine 24a and 24b during compressor operation of Nighttime, the gas turbine side of the Mikata flow control valve 25 is made into a close by-pass bulb completely, a steam turbine side is made as full open, since a compressor is not fundamentally operated during the gas turbine power generation of day ranges, the gas turbine side of the Mikata flow control valve 25 is made as full open, and it makes a steam turbine side a close by-pass bulb completely. Thereby, a steam is supplied to a steam turbine 20 at the time of the compressor drive of Nighttime, the power driven of an air compressor 13 is reduced, and a steam is supplied to a gas turbine 14 or combustor 14a for gas turbines, an output is increased at the time of the gas turbine power generation of day ranges, it supplies an excessive high pressure steam to a steam turbine 20 further, and reduces the power driven of an air compressor.

[0015] The water which passed the condenser 21 supplies the part to an air cooler 18, and supplies the remainder to a steam generator 22. That is, after passing the part cliff condenser 21 of the steamy flow rate supplied to the steam turbine 20 from steamy generation equipment 22, it is returned to steamy generation equipment 22. The output of a steam turbine has the small amount of steams few only with a steam generable [with an air cooler 18]. So, in this invention, the amount of steams is increased with the steam from steamy generation equipment 22, and the steam turbine output is increased.

[0016] Moreover, when water supply becomes a surplus by supplying the surplus high pressure steam from a steam generator 22 to a steam turbine 20, hot-water supply can be carried out as a utility from the downstream of an air cooler 18. Furthermore, in drawing 1 , 26 carries out the preheating of the air which a feed water heater, and 28a and 28b are stacks (chimney stack), and supplies an air preheater and 27 to combustor 14a for gas turbines with the elevated-temperature exhaust gas of a gas turbine 14, raises combustion efficiency, and carries out the preheating of the water supply, and raises the effectiveness of a steam generator 22 (boiler).

[0017] According to the configuration of this invention mentioned above, a high pressure steam can be continuously generated with a steam generator 22 (for example, garbage disposal equipment), the part can be supplied to combustor 14a for gas turbines according to power requirements, and a generation-of-electrical-energy output can be increased. That is, by supplying a high pressure steam to a combustor, to the peak period of the power requirements of daytime, the flow rate of the mixed gas of air and a steam can be raised, and a generation-of-electrical-energy output can be freely increased at it according to need. This increment in an output is possible to about 30% increase extent of the rated output of a turbine, and can reduce that part and the required storage air content per unit generated energy.

[0018] in addition, this invention of many things being boiled and it being able to change in the range which is not limited to the operation gestalt mentioned above and does not deviate from the summary of this invention, is natural.

[0019]

[Effect of the Invention] A stationary-energy-storage mold gas-turbine-power-generation facility of this invention mentioned above has the following descriptions.

1. The steamy assistance at the time of compressed-air storage of Nighttime can be performed. That is, the output of the steam turbine for a compressor drive increases, and the power for a compressor drive can be reduced. Thereby, system efficiency (generation-of-electrical-energy energy/(injection fuel energy + compressor drive power)) improves.
2. The steamy assistance to the gas turbine at the time of the gas turbine power generation of day ranges can be performed. That is, since the air content for a gas turbine drive is reducible, the volume of the high air tank of ** installed cost can be reduced, ** compressor operation time and power consumption can be reduced, and system efficiency improves. Moreover, steamy assistance is possible with slight height in gas-turbine-power-generation effectiveness by installing a gas turbine exhaust-heat-recovery air preheater with high effectiveness.
[0020] As mentioned above, a stationary-energy-storage mold gas-turbine-power-generation facility of this invention has the effectiveness which can miniaturize a compressed-air tank and can be generated by the maximum output at the power-requirements peak period of daytime and which was excellent in **.

[Translation done.]

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the whole stationary-energy-storage mold gas-turbine-power-generation facility block diagram by this invention.
[Drawing 2] It is the conventional CAES-G/T generation-of-electrical-energy structure-of-a-system Fig.
[Drawing 3] It is another conventional CAES-G/T generation-of-electrical-energy structure-of-a-system Fig.
[Description of Notations]
1a, 1b Clutch
2 Compressed-Air Tank
3 Low Voltage Gas-Turbine-Power-Generation Facility
4 High-Pressure Gas-Turbine-Power-Generation Facility
5 Bypass Air Rhine
10 Stationary-Energy-Storage Mold Gas-Turbine-Power-Generation Facility
11 Compressed-Air Manufacturing Facility
12 Gas-Turbine-Power-Generation Facility
13 Air Compressor
14 Gas Turbine
14a Combustor
16a Motor
16b Generator
17a Step-up gear
17b Reduction gear
18 Air Cooler (Boiler)
20 Steam Turbine
21 Condenser
22 Steam Generator (Boiler)
24a, 24b Steamy Rhine
25 Mikata Flow Control Valve
26 Air Preheater
27 Feed Water Heater (Calorifier)
28a, 28b Stack (chimney stack)

[Translation done.]